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ABSTRACT

This paper develops and presents a scheme to facilitate the organization of inquiries in teacher training, and it reviews current research conducted by the faculty at Indiana University, Bloomington, in the area of teacher preparation. The paper is organized into two major sections: (1) "A Scheme for Organizing Information Within Teacher Training" and (2) "A Review of Recent Inquiries in Teacher Training at Indiana University with Implications for Further Study." Selected criteria for organizing the collection of information in teacher training are given: (1) the necessity of documenting the characteristics of the participants in any educational venture; (2) the importance of specifying the settings in which training takes place; (3) the requirement of noting all relevant parameters with regard to the objectives, materials, and procedures that define the educational treatment employed; (4) the indispensability of obtaining performance data that summarize the product; and (5) the inescapable responsibility of making a judgment about the merit of the educational instrument in terms either of relative or of absolute, or both, standards of excellence. Inquiries in teacher training conducted at Indiana University attempt to identify, describe, or study the major variables of instruction. They are of three general types: inquiries attempting to identify dimensions of a major variable, e.g., instructional personnel; those attempting to look at a relationship between major variables; and those attempting to look at the relationship between training variables and training outcomes. The intent of these types of inquiries in teacher training are seen as an effort to optimize training outcomes. (DMT)

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AN OVERVIEW OF INQUIRY IN TEACHER TRAINING AT INDIANA UNIVERSITY-BLOOMINGTON

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INTRODUCTION

The purposes of this paper are: (1) to develop and present a scheme which facilitates the organization of inquiries in teacher training and thereby enhances understanding in this area, and (2) to review current research conducted by the faculty at Indiana University-Bloomington in the area of teacher preparation with the purpose of guiding further explorations in this area.

To that end the paper is organized into two major sections, the titles of which obviate each theme: A Scheme for Organizing Information Within Teacher Training and A Review of Recent Inquiries in Teacher Training at Indiana University With Implications for Further Study.

Before commencing with the body of this report, it seems important that an underlying assumption be stated and that several definitions of terms be offered. The assumption underlying this paper is that inquiry in teacher training has as its purpose the optimation of training outcomes. Readers are encouraged to examine this assumption as its ramifications are made clear in the sections which follow. Teacher Training is defined as "that component of preparation for which departments and schools of education are specifically responsible. Such training is thus professionally or technically oriented in the sense that the skills and knowledge taught are supposed to have a direct bearing on professional practice" (Turner, 1973). Inquiry is broadly defined to mean any attempt to seek out information which has potential utility for improving decision making in the area of teacher training.

A SCHEME FOR ORGANIZING INFORMATION IN TEACHER EDUCATION

Despite the somewhat different emphases of the numerous approaches proposed for organizing the collection of information in teacher training, certain major themes recur: (1) the necessity of documenting the characteristics of the participants in any educational venture (that is, the antecedent conditions that prevail); (2) the importance of specifying the setting in which training takes place; (3) the requirement of noting all relevant parameters with regard to the objectives, materials, and procedures that define the educational treatment employed (that is, the total range of transactions that occur); (4) the indispensability of obtaining performance data that summarize the product; and finally, (5) the inescapable responsibility of making a judgment about the merit of the educational instrument (program, method, teacher, book, and so forth), in terms either of relative or of absolute, or of both, standards of excellence (McGuire, 1967).

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Figure I is an attempt to organize types of information in terms of their logical structure and to point out various relationships of interest in teacher training inquiries.

Training Antecedents - Training Transactions

Within this relationship, two types of inquiry are possible. Inquiry of the first type focuses upon the influence of individual characteristics which (1) are (or might be) used as selection criteria prior to training, (2) are (or might be) important in individualizing instruction for preparatory teachers (Turner, 1973), or (3) are (or might be) key to the recruitment of individuals into training programs or treatment options. It should be noted that inquiry in areas 1 and 3 above have applicability to instructional personnel (supervising teachers, college instructors) as well as to students.

A second type of inquiry which might be done in this area is one using setting (operationally defined as the physical or emotional or intellectual climate for learning) as the dependent variable with any of several elements within the area of training transactions serving as the independent variable. Inquiry of this sort can probe important and much neglected questions: Within what setting are certain objectives most effectively and efficiently acquired? Within what setting are certain teacher training materials most effective? Given recent efforts at developing teacher training materials and the need for the dissemination of such products to stimulate new development or redevelopment, questions such as these are central if indeed consumer utilization is a concern.

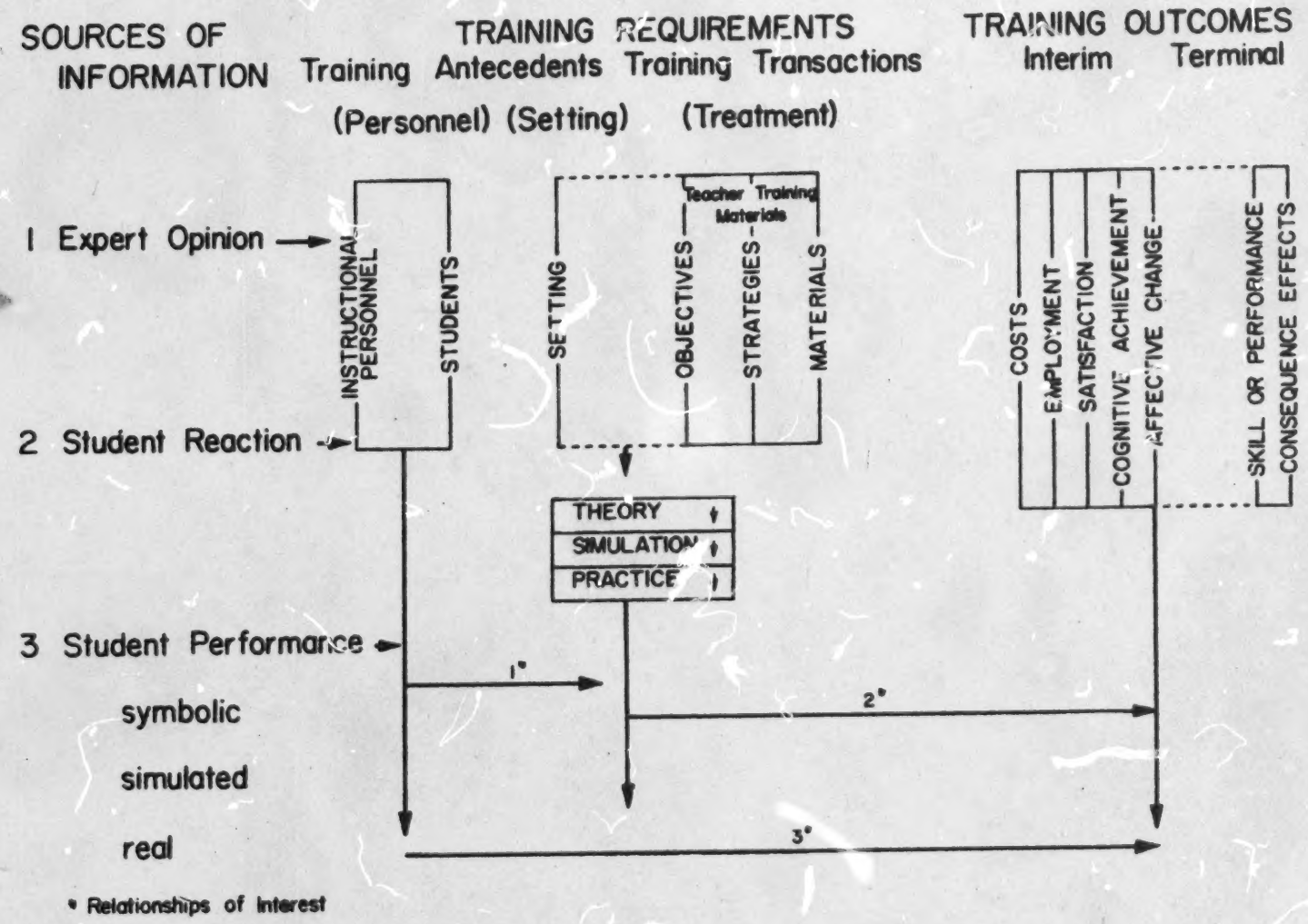
Figure I indicates that training elements (objectives, materials, strategies) are nested within training phases. Together information of these types attempt to identify and describe the parameters of the educational treatment being employed. The major dimensions of the area of training transactions (theory, simulation, practice) follow Hudgins' recommendation (1972) as to an appropriate training cycle for the acquisition of complex skills, in our case teaching competency. While these rubrics currently have limited utility in terms of classifying and organizing information in teacher training, they are included here because they suggest potentially rich relationships which ought to be explored.

Training Transactions - Training Outcomes

Inquiries of this type attempt to determine potentially optimum relationships which exist between instructional transactions and instructional outcomes. Studies involving this relationship are of two general types: (1) studies which show that some transaction is closely related to an interim outcome, i.e., student satisfaction with a given course, module, procedure, program or experience, and (2) studies which show that some transaction is closely related to a terminal outcome, i.e., changes in teacher behavior and pupil learning as a result of a given course, module, program or experience.

The key difference between these studies is not what is studied (the independent variable) but what criterion is used to measure the effect (the dependent variable). This emphasis on selection of the dependent variable is intended to clarify two levels at which feedback to teacher

INQUIRY IN TEACHER TRAINING



° Relationships of interest

education programs could be generated. The choice of criteria depends largely on the amount of confidence one wishes to generate in the module, program, course, being studied. Figure II below suggests that the level of confidence is greatly increased by the intersect of two particular training outcomes; namely, performance and learning.

Student Performance

or

Teacher Behavior

+	-	
I	II	+
III	IV	-

Consequent Effect
or
Pupil Learning

Cell I suggests that when student performance and pupil learning are both used and evidence is collected to document their presence (+), a great deal of confidence is generated in the training element being studied. When either student performance or pupil learning is absent (-), less confidence can be generated and questions of significance need to be addressed, i.e., "Why did a change in performance not show an effect on pupil learning?" and even more confusing, "Why did an absence of teacher performance have a positive effect on pupil learning?" When both criteria are absent, little confidence is generated in the procedure. Clearly the teacher educator would want to begin by insuring a change in student performance (that is, check to see that the skill is actually used). Okey and Humphreys (1974) suggest that inquiry in this area be conceived as a two step operation: "The first phase involves the acquisition of a skill (or skills) by teachers and the second phase the effectiveness of the skills when used."

While it is true that less confidence can be generated by studies involving the relationship between training transactions and interim training outcomes (costs, satisfaction, etc.), this is not to dismiss the importance of these studies. Many educators argue that given (1) the insensitivity of our observational and measuring instruments, and (2) a general lack of understanding of moderating variables in teacher education research, many interim criteria are not only tangible, but are furthermore more accessible and understandable. The argument is hard to dismiss: Given academic budgets, costs are important. Given the job market, employment is central. Given wide criticism of teacher preparation programs, calls for new levels of relevancy and involvement, and the central role that students play in recruitment to programs, satisfaction is clearly a variable worthy of study.

Training Antecedents - Training Outcomes

Inquiry of this type attempts to determine relationships which are predictive or potentially predictive between training personnel (students and instructional personnel) and/or setting and interim (satisfaction, cognitive achievement) or terminal (pupil learning and teacher performance) training outcomes. Such studies are important to teacher education because they have the potential to identify the talent inputs needed to optimize training outcomes (Turner, 1973). A second type of inquiry in this category attempts to study the relationship between setting and training outcomes. This type of inquiry is important to teacher training because it has the potential of identifying the setting needed to optimize training outcomes. While some research has been done in this area, limited studies have been carried out systematically exploring the dimensions of the optimum setting which is needed for a specific training program.

Training Requirements - Training Outcomes

A fourth relationship of interest in teacher training is one which looks at the effect of a total program or experience upon one or more training outcomes. Studies of this sort are typified by their "general effects" approach to inquiry in teacher training. Such studies are important in teacher training if they have as their purpose the improvement of research hypotheses for use in subsequent inquiries in teacher training (Rosenshine, 1971; Snow, 1974).

Conclusion

If optimizing training outcomes is the aim of inquiry in teacher training, then efforts to determine which combination of requirements produce which effect should be of continuing interest to educational researchers. In one sense the whole history of teacher training research can be summed up as a continual search for more viable training models. The acquisition of teaching competency, we are just now learning, is a complex process. It is indeed unfortunate that teacher education began with such naive models and under such naive assumptions that the struggle within teacher training research is one characterized by finding more viable models -- models describing more accurately the complexities involved in the training process. The specification, identification, and iteration of these complexities is everyone's business. Research which looks at these relationships can do much to lend insight and understanding in this area.

A REVIEW OF RECENT INQUIRIES IN TEACHER TRAINING AT INDIANA UNIVERSITY WITH IMPLICATIONS FOR FURTHER STUDY

Inquiries in teacher training attempt to identify, describe, and study the major variables of instruction. Inquiries are of three general types: (1) inquiries attempting to identify dimensions of a major variable; (2) inquiries attempting to look at a relationship between major variables, and

(3) inquiries attempting to look at the relationship between training variables and training outcomes. The intent of these three general types of inquiries in teacher training is seen as an effort to optimize training outcomes.

Training Requirements

Instructional Personnel:

Probably the variable least studied in inquiries in teacher training is that of instructional personnel. Whether because of proximity, sensitivity, or both, few studies have been performed intensely looking at the personnel who are charged with the major instructional responsibility within various training programs. The terms training personnel and instructional personnel are used here interchangeably to include professors, supervising teachers, community leaders, and others who handle instructional responsibilities within the program. Training personnel and instructional personnel might be studied from the perspectives of professional background, cost, workload, special training, interest, motivations, and/or effects on student achievement, student attitudinal growth, and/or student performance.

The only reported effort currently under way on our campus is a look at instructional personnel in terms of faculty load (Wang, 1974). Even this study may be of concern to most faculty, given the fact that faculty load as a construct is typically operationalized to mean courses taught -- a conception which fails to take into account the multiple activities which instructional personnel engage in as they recruit, develop, disseminate, research, supervise and instruct within their programs. Yet there is a crying need in teacher education to expose the futility of equating courses taught with the faculty load concept. Comparative inquiries in this area are a first and much needed step.

Many unofficial studies of instructional personnel are, of course, made yearly by department chairmen as they make recommendations for merit pay raises, tenure, and promotion. Data of this sort is usually collected from colleagues and students in the case of tenure and promotion; yet, because of the nature of the data and the circumstances surrounding its gathering, the results are almost never made public and in terms of increasing the profession's range of knowledge, little of anything is gained.

Researchers interested in this area have virtually an untapped field. A host of questions need exploration: What are the characteristics of professors who are successful in undergraduate teaching? Undergraduate teaching in a field-base program? In-service capacities? In graduate study? Given the numbers of faculty engaged in teacher education, profiles of training personnel might be developed in terms of functions to be performed by the department. If the art of faculty utilization and selection is to become other than one of the "black arts," progress along these lines must be made.

Inquiries exploring the relationship between training personnel and training outcomes are equally interesting and accessible to members within

teacher training programs. Mahan and Clark (1972, 1973, 1974) have conducted some inquiries into this area by asking the students to rank professors in the Professional Year Program in terms of how much they attribute specific instructors with assisting them in acquiring key concepts and skills of the program. While this data has not been presented in national conventions, the data has been used to make recommendations for the continuation or replacement of certain faculty within this training program.

Similarly, in an effort to bring order into the identification of supervising teachers, Loadman and Mahan (1973) studied the relationship between the ranking given to supervising teachers by students and the teacher's score on an instrument designed to measure attitude toward education.

It is indeed unfortunate that we have not looked at ourselves and our faculty resources more closely in terms of the training functions to be performed at this university. Clearly an institution of this size may well find faculty with training strengths which vary greatly. Most of us already know that such differences exist. Profiles in terms of training personnel strengths and weaknesses might be a first step in building a variety of programs which allow for wide faculty participation and permit students to experience the best instruction given at the hands of the most competent persons in the area in a wide variety of areas.

Students:

Students are defined as pre-service and in-service educators and even more broadly as the recipients of instruction. To think of students as the major variable of training is to concede what past research has suggested; namely, that a three-way interaction occurs in teacher training between students, content, and outcomes. Many of us are all too much aware of the fact that given some programs, some students will be successful, others will be partially successful, and some others, quite simply, will be unsuccessful. Although we repeatedly compromise, bend, or experience failure in our dealings with this latter group of students, a policy of open enrollment is perpetuated under the banner that good programs meet the needs of all teacher trainees. While such a position is nice, a more useful one might accept and accent the diversity of student need, build upon these differences, and take direct and concerted steps to match programs with students. Opportunities for extensive inquiry in this area are readily available in the Division of Teacher Education where alternative programs are available to students both at the elementary and secondary school levels. It is my recommendation that each project and program director make at least one, what I will call for lack of a better name, "goodness of fit" study between students and their program each year.

Inquiries of this sort are greatly facilitated given these facts: (1) a data bank of all students in the Division is currently operational; (2) a compilation of all survey instruments used by programs and projects is currently being assembled; and (3) many inquiries have already been made by members of this faculty which provide a base upon which further research can build.

The Division of Teacher Education's Evaluation Team is currently conducting a follow-up study of all teacher training dropouts. Information as to who is failing and why they are failing is central in the development and redevelopment of training components.

Initial inquiries exploring the three-way interaction between content, student, and outcomes, have been made by several faculty. Ehman (1973) studied teacher attributes as they related to teacher performance on specific teaching tasks. Overt pupil responses and covert pupil responses were used as the criterion against which success and non-success of teacher performance was measured.

Harste, in a recent study completed (1974), looked at student achievement (operationally defined as past academic history) in relation to success in performing various tasks within the RELATE Program. In the Harste study, holding time as a variable constant, success in performing teaching tasks within the RELATE Program was predictable using academic ability as a predictor.

While the Ehman and Harste studies are the only two studies which attempted to look at interaction between students, content, and terminal outcomes, sundry studies have been made looking at the interaction between students, content and intermediate outcomes.

A recent study surveyed graduates of the 1972-73 RELATE Program (Harste and Newman, 1974) and asked them to compare their work in the RELATE Program with that of the work in their other methods courses. The results of this study suggested that using the criterion of student satisfaction the program was indeed a success.

Satisfaction as a criterion has been used by several other members of the Division including Mahan and Clark (1972, 1973, 1974), Marten and Dunfee (1974), and other directors of teacher training program options. The overwhelming conclusion to be drawn from these surveys is that students are generally very satisfied with their experiences in teacher training options. This overwhelming support by students should not be dismissed lightly given the history of teacher education and the criticisms which have existed.

In related research, Mahan (1974), using a pre- post-test design, is looking at changes of values toward minority groups by students as a result of experiences in the Multicultural Educational Program, the Latino Project and the American Indian Project. While this data is yet to be completely analyzed, initial analysis suggests that some assumptions underlying these programs may be unfounded. If indeed values set the stage for behavior, then clearly this is an area which demands further exploration by personnel in these training options.

Stayrook and Majer (1974), using attitudinal change as a dependent measure, studied the effects of the Associate Instructorship Program. These researchers found students to have a more positive attitude towards associate instructors who had participated in their training program than did students who had instructors who did not participate in the program.

Affective growth as a criterion was used in the Encore Program to determine the effectiveness of a special program on open education (Marten and Dunfee, 1974). Results of this study suggest that student attitude toward open education did change in the desired direction as a result of this experience.

Mahan and Lester (1973) studied the rating given to supervising teachers by students who were judged to have been successful and less successful in

the Professional Year Program. An analysis of their data revealed that there was a tendency for successful students to be more critical of their supervising teachers than their less successful colleagues. A follow-up study exploring this phenomenon is currently being conducted (Mahan, 1974).

The motivations of students entering various options within the Division was the topic of a recent study by the Reading and Language Arts Reference Faculty. While this data has not been formally analyzed and discussed by the group as of this date, the data do suggest a distinctive patterning of motivations is identifiable among students within any one program option (Strater, 1974).

Employment as an interim outcome of a training program and as a dependent variable has been used in a variety of studies conducted by members of the Division. Mahan and Clark (1974) have studied employment trends among graduates of the Professional Year Program. These data to date suggest that employment trends among graduates of the Professional Year Program are significantly higher than graduates of the regular program.

Mahan (1974), in a somewhat related vein, studied graduates of the American Indian Project by following these students after graduation to determine if they had acquired employment. Students with jobs were then evaluated by employers and by their school principals. While the graduates of this program were few (and I might add parenthetically the results supportive), the study's value lies in that it outlines a set of procedures for conducting a much needed type of program evaluation.

Knapczyk and Dever (1974) report that they have used teacher satisfaction with students in their program as a training outcome criterion. Employer satisfaction as a training outcome criterion will be the next area of exploration.

Doerann (1974) working as a member of the Division's Evaluation Team is conducting a placement follow-up study of all Division graduates. While this data is not currently available, the utility of such data is obvious in terms of program development and planning.

Farr and Wolf (1974) have been active in the development of new techniques for the evaluation of programs. One such technique currently under development is the responsive technique (Wolf 1971, 1974). In this technique reactions to the program are collected from program participants. Data so collected are free of internal criteria often imposed by the evaluator. Currently, the potential of the technique is being actively explored within the Social Studies Project and the Alternative Schools Project. Researchers interested in using this technique to explore dimensions of their programs should contact the Evaluation Team.

Other dimensions of student performance have been used by several of the members of this school faculty. Fink, in an effort to look at key interactions between students and pupils in special education settings, has developed an interaction analysis system (1971). LeBlanc has developed a Mathematics Content Test and uses this instrument as one of many measures within a comprehensive program of evaluation (Dodd, 1974). Likewise, the Reading Practicum Center Team has worked on the development of a Content Mastery Test in the Field of Reading. Because of renewed interest in an instrument

of this sort, a joint effort between New York and Indiana is currently being proposed for the refinement of the instrument (Strickler, 1974).

Ingersoll (1974) has suggested a model for conducting research which attempts to identify key dimensions of the student variable as they interact with treatment alternatives. Aptitude-treatment interaction research attempting to identify key dimensions of the student variable has also been conducted by Baker and Snow (1972) and Semmel and others (1969, 1970).

Training Transactions

Setting:

Logically the setting (physical, emotional and/or academic environment) provided and in which a program operates can either facilitate or retard the acquisition of key program objectives and goals. Inquiry in this area should have as its purpose the facilitation of site selection and the identification of major dimensions of this variable which ought to be considered by program implementers as they decide on the setting in which their programs will operate. Dimensions of site which ought to be explored include willingness to become involved in a teacher education function, similarity of values between program philosophy and site philosophy, and receptivity or openness to new ideas and change. Harty (1973) has compiled, (along with many other published and unpublished instruments which can be used for other purposes), a set of instruments which researchers interested in this area could use to explore dimensions of setting.

Despite the obvious importance of this variable, little research has been reported. This lack is in part due to a finite number of sites (this is especially true in a company town such as Bloomington), and a concomitant attitude that few alternative decisions in this area exist. Nonetheless, given the merger with Indiana University-Purdue University, Indianapolis, and the work of the Field Implementation Office (Hogle, 1974) in expanding field base sites, inquiries into this area for members of this faculty seem ever more appropriate.

Questions which might be addressed are: What are training outcome costs and benefits given the selection of site A or B? What training objectives are facilitated given the selection of site A or B? It may well be that certain sites facilitate the acquisition of certain training objectives more fully than others. We should be selective. A good multicultural setting may be the type which best approximates the environment which graduates will find themselves teaching in . . . . and then again it may not. Until research of this sort is conducted, we really do not know the answer to questions such as these. We feel that site likeness is important, but inquiry must take precedence if we are to progress.

While explorations into this area by the faculty are not widespread, some explorative activities have been done. Harste (1972) looked at pupil achievement as measured by the Iowa Test of Basic Skills under student teachers trained in a field-based setting and compared pupil progress with students not so trained. The results of this study indicated that pupils being instructed by student teachers trained in a field-based program differed in the academic progress which they were making.

Smith (1974) currently is developing an instrument which purports to measure values prominent in alternative schools. This instrument, once developed and validated, will serve the Alternative Schools Project in selecting schools which have philosophic orientations consistent with the teacher training program in which students are being trained.

Some analysis of the adequacy of teacher training settings is currently being conducted by the Evaluation Team (Farr and Wolf, 1974). To date, however, this data has not been made public. In cooperation with Farr and Wolf, Lang (1974) reports that he is studying setting in terms of student teacher placements during the 1974-75 school term.

Objectives:

The history of educational research suggests that if you know where you are going, chances are you will get there. While objectives are not new to teacher training, the emphasis on public objectives, behavioral objectives, and competencies most clearly is. There are basically two categories under which inquiries into this training prerequisite can be grouped. Group I centers on identifying objectives for teacher training. Examples of inquiries which have been conducted by the faculty at Indiana University are those done by Brown and Okey (1973) in identifying competencies for performance-based Teacher Education Programs; the Harste, Strickler, Shirley, and Litcher study (1975) designed to develop a procedure for identifying reading teacher competencies; and Batchelder's study (1974) attempting to identify science teacher competencies. The pattern of these studies appears remarkably similar. Typically, a two-step procedure is used consisting of a review of literature (this often involves building on existing compilations) followed by a collegial review and ordering.

The second group of studies is seldom reported but the studies are of great interest to the developer. These studies discuss the extent to which each objective within a given program has been met by participants in that program. Data of this sort is seemingly routinely collected by program and project personnel (Barr, 1974; Bishop, 1974; Coppedge, 1974; Englander and Engle, 1974; Flanigan, 1974; Gregory, 1974; Harste and Newman, 1974; Hogle, 1974; Lovano-Kerr, 1974; McQuigg, 1974; Mahan, 1974; Mahan and Clark, 1972, 1973, 1974; Marten and Dunfee, 1974; Overly, 1974; and Patterson, 1974) and is used to make subsequent decisions regarding strengthening the program to support the objectives, revising the program, or dropping certain program objectives. The most common form such inquiries take is one of asking students how well they perceive their mastery to be. This procedure has been used for determining the adequacy of the current coverage of goals developed by the Reading and Language Arts Reference Faculty (Chairman's Report, 1974) and among most programs in the Division of Teacher Education. Numerous directors of past and present federal projects report following a similar procedure (Bhola, 1970; Buffie, 1971; Harste, 1972; Lang and others, 1973; Marker and Mehlinger, 1973; Mehlinger and Patrick, 1971; Risinger and Radz, 1973; Smith and others, 1970; Smith, Harste, Mahan and Clark, 1974). Exceptions to this trend do occur with some programs and projects requiring the student to actually use the skill in a simulated or actual classroom situation. (It should be added parenthetically, however, that inquiries of this latter type rarely are conducted throughout the program using the intersect of variables earlier identified as student performance and pupil learning.)

Materials:

Teacher training materials are broadly defined to include any written and specified set of procedures having as its purpose the movement of students towards some clearly identified training objective(s). While much comparative research is possible in the area of teacher training materials, such research to date has not been reported. For example, given the number of teacher training materials developed to teach the concept of questioning, comparisons using student performance, pupil learning, and costs might well be made. A review of the research identifies few such explorations. Numerous examples such as this could be cited (see Rosenshine, 1974). Readers interested in teacher training materials developed in a wide variety of areas should see a recent report of products produced by the National Center for the Development of Training Materials in Teacher Education (1974). Readers interested in teacher training materials developed in the area of reading and language arts should see Strickler (1974). Researchers interested in conducting studies in this area are well advised to review possible designs for conducting such research as have been suggested by Okey and Ciesla (1972).

While not a direct comparison between teacher training materials, Doerann (1974) in a report being drawn together, collected all instructional materials developed by members of the Division and sent them to professionals in the field for evaluation. Such feedback can be most helpful to the developer in revising the product as well as serve as a form of product dissemination.

Ehman and Van Sickle (1973) in a report recently published by the National Center for the Development of Training Materials in Teacher Education have evaluated Okey and Ciesla's Teaching for Mastery Module (1972). These researchers first rewrote the teacher training materials for social studies and then conducted a detailed field test on the materials using principally the criterion of teacher performance. Although pupil learning was studied, the small number of pupils involved made drawing generalizations from the data impossible. This in depth and detailed analysis of the program in terms of major and minor outcomes, however, is classic and a worthwhile prototype for others to follow in field testing teacher training materials. A procedure similar to this, involving evidence on subordinate skills, was used in the revision of a science topic by Okey and Gagné (1971).

Many persons within the school have been involved in studying teacher training materials in terms of their effects upon student performance, pupil learning, or both. Again, Okey and Ciesla's Teaching for Mastery has been the focus of several excellent studies (Burrows, 1973; Ciesla, 1973; and Okey, 1973). In all of these studies the criteria of student performance and pupil learning have been used. While the findings of these field testings are inconsistent, they do provide significant data for the developers to use in redesigning and strengthening the teacher training material.

Most of the teacher training materials developed by personnel at the National Center undergo field testing using at minimum the criterion of student performance. Okey (1974) is currently developing a teacher training module entitled Diagnostic Teaching and Instructional Sequencing. Field tests are now being conducted with these materials. Walden reports that his materials on Oral Communications (1974) are being field tested and studied in terms of the teacher performance.

Student performance has been the criterion of numerous investigations (Werking, 1971; Campbell, 1973; and Jaus, 1973). Bedwell (1974) and Doyle (1972), two of Okey's doctoral students, looked at the teacher training materials on questioning developed by Okey and their effect on student performance and pupil learning.

Other inquiries in this area include Strickler's (1972) research on Mini-Course 18 -- Reading as Decoding in which he studied the effectiveness of the program in terms of changing teacher performance and pupil learning, and Kleucker's study (1974) in which he examined the effects of protocol and training materials in terms of the teacher trainee's ability to acquire instructionally related skills and concepts.

Mittler (1974) has developed a set of teacher training materials designed to train prospective teachers in the area of art criticism. He reports that studies attempting to determine the effectiveness of these materials are currently being conducted. Hubbard (1974) has also been active developing teacher training materials in art. Currently his efforts have been in the area of development of programs for computer adaptation and the development of simulations to teach key concepts in art methods. Hubbard too reports that field tests of these materials are currently underway.

Gillespie (1974) reports that she is working on a set of teacher training materials for use with computerized instruction in the area of diagnosis. Brown (1974) and Humphreys (1974) report that they are working on the field testing of respective sets of teacher training materials in the area of individualizing instruction and problem-solving skills. It is unclear from these self reports at what stage this development is at this time.

Much activity is reported in developing teacher training materials using simulation and gaming. Thiagarajan continues to be active in the development of simulation materials (1973). What research he has conducted on the effectiveness of simulation is by my research unclear; however, each semester CITH invites all members of the Division to participate in field testing simulation materials developed by the Center and in joining the Center in developing further simulations. Fink and others (1971) report that they have completed some research in this area studying the effectiveness of games in terms of pupil attending behavior patterns.

Strategy:

A strategy is defined as a set of procedures which attempts to describe, often implicitly, the interactions which take place between some content, the learner and the teacher. Inquiries in this area have as their function: (1) a determination of the current status of certain instructional strategies; (2) the identification of strategies which might form the core of a set of teacher training materials; and/or (3) the selection of certain strategies through verification with learners.

An example of the first type of inquiry is that proposed by Semmel and Smith (1974). These researchers plan to observe teachers to determine which strategies are currently being used to teach word analysis skills in the area of reading. The long range intent of this research is to build training materials to help teachers use improved strategies in this area. The Semmel and

Smith proposal builds on inquiry initiated by William Lynch. Lynch (1974) typically observes teachers in the classroom situation, identifies common or reoccurring strategies which they are using, develops teacher training materials to assist the teacher in improving or expanding his knowledge of options available to him, and then validates the material in terms of teacher performance and pupil learning. Research procedurally similar to this has been conducted rather consistently by faculty in educational psychology and special education. Semmel (1968), for example, followed a similar procedure in looking at the verbal interaction patterns that special education teachers used. Fink (1972) developed an interaction system that permits the coding of verbal interactions of particular interest in a special education classroom. Earlier inquiry in this area, also done by Semmel (1968), included his work on disability labels and their effects on information processing procedures by trainees. Garrett (1974) also has done work in this area looking at the effects of disability labels on information processing strategies of teachers. Another avenue of Garrett's research (1974) has taken her into the area of modeling. While both studies have much potential for teacher training, to date no teacher training materials have evolved from this work.

Many faculty have studied various approaches to teaching concepts within their discipline. Many of these studies (Anastasiow, 1970, 1974; Bell, 1969, 1970; Blanton, 1973; Butler and others, 1972; Butler, 1972; Cunningham, 1972; Dunfee, 1971; Ehman, 1973; Farr and Roelke, 1971; Garrett, 1973; Garrett, Cunningham and Buelow, 1974; Goodman and Burke, 1973; Gregory, 1974; Ingersoll, 1971; Keller and Cunningham, 1973; Michalak, 1971; Molenda, 1974; Patrick, 1970, 1972; Sitko and others, 1972; Scott and others, 1970; Semmel, 1969; Smith, 1970; Tuinman, 1971; Weintraub, 1969) have provided data which indicate the superiority of certain methods over other teaching methods. Whether this research will result in the development of teacher training materials remains to be seen. It would appear, however, that many of these studies might be revisited by other researchers and teacher training materials developed from them. It is likely that many of the persons who performed the basic research will not take the next steps needed and actually carry it through to the development of teacher training materials. Certain members of the special education and educational psychology faculty are unique in their follow through of concepts from basic research through teacher training material development and validation.

An area that has been explored extensively by Lynch and Ames (1972) and Coop and Brown (1970) is that dealing with the cognitive demands that are present in instruction. Lynch and Ames (1972) have developed materials calling for differing cognitive demands to determine if certain objectives are more easily attained using one instructional strategy over another.

Many other faculty have been involved in studying other and related aspects of strategies. Andersen, for example, has looked at questioning strategies as well as the science process skills used by teachers to determine effects on instruction. Skeel (1970) in an early study looked at the effect of objectives on the cognitive achievement of teacher trainees. Shuster, in a recently completed study (1974), has looked at the effects of various types of training on student outcomes. Dodd (1974), recently completed a very extensive review comparing two training programs and their effects on pupil learning and student outcomes. Dodd's study is an interesting one. Clearly the procedures she has developed are worthy of emulation by researchers interested in intensely studying the differential effects of various programs in terms of student performance and pupil learning.

CONCLUSION

Barak Rosenshine in a speech given at the Midwest Conference of Professors of Educational Psychology (1974) said, "There is probably more good teacher training research going on at Indiana University than at any other institution in the nation." This statement suggests that Indiana University is already a leader in research in teacher training. If true, the faculties of the School of Education and, specifically, the Division of Teacher Education, are in a very fortuitous position and should, with little effort, be able to maintain that stature. This report also indicates that by anyone's standards a good deal more could be done, some seemingly with little extra effort. The recommendations which follow are offered to stimulate thinking as to how further inquiry in teacher training might be immediately encouraged and facilitated at this institution.

Recommendation 1

Priority, attention and funding should be given to the development of a catalogue containing criterion measures by training outcomes. This effort would involve the development of a taxonomy of training outcomes and the subsequent identification of appropriate instruments. The priority that is given to this recommendation is based on the assumptions: (1) that much research is not currently conducted which might be conducted because criterion measures are inaccessible, unknown, or incomplete when referenced; (2) that construction and validation of criterion measures is an onerous and time-consuming task which deters widespread involvement in teacher education research; and (3) that the development of such a catalogue would encourage the use of certain criterion measures and thus stimulate much needed cross program comparisons in teacher training.

Recommendation 2

Concurrently, if possible, attention should be given to the refinement and further development of a teacher education student data bank. Problems which need to be addressed include: (1) what information to collect, (2) how to tap existing student data information, (3) how to centralize, store, and make such data immediately accessible to interested researchers in teacher training. The importance of this recommendation rests on the assumption that until we fully understand key dimensions of the student variable as an antecedent to training, we will be unable to fully understand many training outcomes as well as key facets of the teacher training process itself. It is further assumed that the development of the best student data bank possible, given our current level of understanding, will do much to facilitate longitudinal studies in teacher education--a type of inquiry in teacher training which currently is in much neglect.

Recommendation 3

My third and last recommendation is that an active campaign to free monies and faculty time be launched with the purpose of stimulating and encouraging research in teacher education. While progress has already been made in this direction, much more needs to be done. Many ideas as to how

this might be accomplished need to be explored, including a greatly expanded divisional fellowship program, internal floating sabbatical leave positions, and the establishment of a no-review small research grants program to be given upon faculty request. While these notions may seem outlandish within a period of tight money, they are presented on the assumption that the current manner by which research is encouraged in this school--everyone gets one-fourth of his time each semester for research--needs immediate reexamination.

While clearly many more recommendations might be made and cases made for each, I have purposely limited my recommendations to three. Three which I personally believe are key to stimulating much needed research in teacher training. I have purposefully avoided indicating any preference for the type of research which is to be funded, although I must admit I have bias in this area. Nonetheless, they are biases and are left unstated because more than anything else this project has made me aware that much of what we know has resulted from a study of variables I would have, if I had been asked, discouraged. It remains to be said formally that I find inquiry into teacher training to be an area of great personal interest, and therefore welcome and solicit your reaction and response.

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NOTES

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3. Portions of this paper were presented at the National Conference on Teacher Education at Indianapolis, November 1, 1974, and to the faculty at the Division of Teacher Education Faculty Seminar on November 19, 1974.